

METHOD FOR DETECTING EXTENDED RANGE MOTION AND COUNTING MOVING OBJECTS USING AN ACOUSTICS MICROPHONE ARRAY

Abstract

An acoustic array platform comprising multiple spaced microphones and associated processing electronics/algorithms projects distinct beams in a chosen look direction across which moving objects such as vehicles pass. These moving objects are accurately detected, classified and counted at extended ranges. The acoustic microphone array employs optimized beamforming to create specially focused listening directions that function as a "motion detector" and "trip line counter". Algorithms detect and confirm the appropriate presence of objects moving through the beams and perform other algorithmic tests to verify that the object is a valid object to be counted. The proposed approach is realized with modest sized acoustic arrays and a reasonable number of microphones by employing an adaptive beamforming algorithm that achieves enhanced directivity in a principal look direction and which significantly reduces the effects of interferers outside the precise steering direction of the "trip line".